

Docket 204/505 US
Applic: 10/590,180Amended Claim Listing

1. (Previously Presented) An apparatus for free motion stitching and for inserting stitches of uniform length through a stack of one or more fabric layers as said stack is manually guided in a substantially horizontal plane, said apparatus comprising:

a fixedly located stitch head including a needle mounted for cyclic vertical movement;

a bed defining a substantially horizontally oriented first planar surface mounted opposite to said stitch head;

a frame configured to retain said fabric layer stack in a substantially taut condition adjacent to said first planar surface;

at least one bearing supporting said frame for manually guided movement to move said stack across said first planar surface;

a detector for producing one or more signals representing the magnitude of translational movement of said frame; and

control circuitry responsive to said detector signals indicating a magnitude of translational movement exceeding a threshold magnitude for causing said needle to execute a cyclic movement from an up position remote from said stack, to a down position piercing said stack, and back to said up position.

2. (Cancelled)

3. (Currently Amended) The apparatus of claim 1 wherein said bearings ~~comprise wheels~~ at least one bearing comprises a wheel.

4. (Currently Amended) The apparatus of claim 1 wherein said bearings ~~comprise slide members~~ at least one bearing comprises a slide member.

5. (Previously Presented) The apparatus of claim 1 wherein said detector is coupled to said frame for movement therewith.

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1 6. (Original) The apparatus of claim 5 wherein said detector comprises an
2 optical detector responsive to light reflected from said second planar surface.

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4 7. (Previously Presented) The apparatus of claim 1 wherein said detector
5 comprises at least one arm linked to said frame for movement therewith and means
6 responsive to movement of said arm for producing said signals.

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8 8. (Previously Presented) A method of forming successive stitches of
9 uniform length while free motion stitching through a stack of fabric layers, said method
10 comprising:

11 mounting an actuatable stitch head at a fixed location above a planar
12 surface;

13 mounting a stack of fabric layers to a frame;

14 manually moving said frame to guide said stack across said planar surface;

15 detecting the movement of said frame; and

16 actuating said stitch head in response to a magnitude of frame movement
17 greater than a threshold magnitude to cause a needle in said stitch head to move from an
18 up position remote from said stack, to a down position piercing said stack, and back to
19 said up position

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21 9. (Original) The method of claim 8 wherein stitch head is actuated at a rate
22 proportional to the rate of translational movement of said frame.

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1 10. (Previously Presented) A method of forming successive stitches of
2 uniform length while free motion stitching through a stack of fabric layers, said method
3 comprising:

4 mounting an actuatable stitch head at a fixed location above a planar
5 surface;

6 mounting a stack of fabric layers to a frame;

7 manually moving said frame to guide said stack across said planar surface;

8 detecting the movement of said frame; and

9 controlling said stitch head to cause a needle to execute cyclic movements
10 at a rate proportional to the speed of movement of said frame.

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12 11. (Previously Presented) An apparatus for free motion stitching and for
13 inserting stitches of uniform length through a stack of one or more fabric layers as said
14 stack is manually guided in a substantially horizontal plane, said apparatus comprising:

15 a fixedly located stitch head including a needle mounted for cyclic vertical
16 movement;

17 a bed defining a substantially horizontally oriented first planar surface
18 mounted opposite to said stitch head;

19 a frame configured to retain said fabric layer stack in a substantially taut
20 condition adjacent to said first planar surface;

21 at least one bearing supporting said frame for manually guided movement
22 across a substantially horizontally oriented second planar surface to move said stack
23 across said first planar surface;

24 a detector for measuring the movement of said frame across said second
25 planar surface; and

26 control circuitry for causing said needle to execute cyclic movements at a
27 rate substantially proportional to the rate of frame movement measured by said detector.
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1 12. (Original) Apparatus for use in combination with a sewing machine which
2 includes a drive subsystem configured to cycle a needle through a path of vertical
3 movement from an up position to a down position and back to said up position, said
4 apparatus comprising:
5 a frame;
6 means for removably securing a stack of one or more fabric layers to said
7 frame;
8 bearing means mounting said frame for hand guided movement across a
9 planar surface;
10 detector means for producing signals representing the magnitude of
11 translational movement of said frame across said planar surface; and
12 means for coupling said signals to said drive subsystem to synchronize the
13 cycle rate of said needle to the translational movement of said frame.

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15 13. (Original) The apparatus of claim 12 wherein said bearing means
16 comprises at least one wheel.

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18 14. (Original) The apparatus of claim 12 wherein said detector means
19 produces signals representing the magnitude of frame translation along first and second
20 perpendicular directions.

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22 15. (Original) The apparatus of claim 12 wherein
23 said means for coupling is adapted to apply said signals to said drive
24 subsystem to initiate a needle cycle in response to frame translation exceeding a
25 threshold magnitude.

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1 16. (Original) The apparatus of claim 12 wherein said drive subsystem
2 includes speed control circuitry; and wherein
3 said means for coupling is adapted to apply said signals to said speed
4 control circuitry.

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